

C1 -- The U.S. Government has a paid-up license in this invention and the right in limited circumstances to require the patent owner to license other on reasonable terms as provided for by the terms of contract no. N00014-00-C-0062 awarded by Office of Naval Research. --

In the CLAIMS:

Please **CANCEL** claims 1-17, and 20 without disclaimer or prejudice to their presentation in a continuing application.

Please **AMEND** claims 18 and 19 as follows. The "marked-up" version of the amended claims are provided in APPENDIX B attached hereafter.

C2 18. (Amended) A carbon foam produced by heating comminuted coal particles under pressure ranging up to about 500 psi in a pressure controlled mold and under a non-oxidizing atmosphere to a temperature ranging from about 300°C to about 700°C.

19. (Amended) A method for producing carbon foam, comprising the steps of:  
placing comminuted coal particles in a pressure controlled mold; and  
heating the comminuted coal particles under pressure ranging up to about 500 psi to a temperature ranging from about 300°C to about 700°C, thereby producing carbon foam.

Please **ADD** claims **21-38**, as follows:

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21. (New) A method of making carbon foam, comprising the steps of:  
placing coal particles having a free swell index ranging from about 3.5 to about 5 in a pressure controlled reactor;  
controlling pressure in the pressure controlled reactor, wherein the pressure is maintained below about 500 psi; and  
heating the coal particles in an inert atmosphere to a first temperature,  
wherein the steps of controlling pressure and heating the coal particles produces carbon foam having a predetermined density.
22. (New) The method of claim 21, wherein the first temperature is a temperature ranging from about 300°C to about 700°C.
23. (New) The method of claim 21, further comprising the step of maintaining the pressure of the pressure controlled reactor during heating below about 500 psi.
24. (New) The method of claim 21, further comprising the step of calcining the carbon foam by heating the carbon foam to a temperature ranging from about 800°C to about 1200°C.

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25. (New) The method of claim 21, further comprising the step of graphitizing the carbon foam by heating the carbon foam to a temperature ranging from about 1700°C to about 3000°C.

26. (New) The method of claim 21, wherein the coal particles have a size less than about one-fourth of an inch.

27. (New) A method of making carbon foam, comprising the steps of:  
placing bituminous coal particles in a pressure controlled reactor;  
controlling pressure in the pressure controlled reactor, wherein the pressure is maintained below about 500 psi; and  
heating the bituminous coal particles in an inert atmosphere to a first temperature,  
wherein the steps of controlling pressure and heating the bituminous coal particles produces carbon foam having a predetermined density.

28. (New) The method of claim 27, wherein the first temperature is a temperature ranging from about 300°C to about 700°C.

29. (New) The method of claim 27, further comprising the step of maintaining the pressure of the pressure controlled reactor during heating below about 500 psi.

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30. (New) The method of claim 27, further comprising the step of calcining the carbon foam by heating the carbon foam to a temperature ranging from about 800°C to about 1200°C.

31. (New) The method of claim 27, further comprising the step of graphitizing the carbon foam by heating the carbon foam to a temperature ranging from about 1700°C to about 3000°C.

32. (New) The method of claim 27, wherein the coal particles have a size less than about one-fourth of an inch.

33. (New) Carbon foam, comprising:  
an open-celled structure produced by heating bituminous coal particles in a pressure controlled reactor above about 300°C, at a pressure ranging up to about 500 psi, and under a non-oxidizing atmosphere, wherein the carbon foam has a density ranging from about 0.1 to about 0.6 g/cm<sup>3</sup>.

34. (New) The carbon foam of claim 33 wherein the carbon foam has a thermal conductivity below about 1 W/m K.

35. (New) The carbon foam of claim 33 wherein the carbon foam exhibits pore sizes below about 500 μm.